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ABSTRACT

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ACHIEVEMENT MOTIVATION AND SELF-ATTRIBUTION RELATED TO SCHOOL ACHIEVEMENT

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ABSTRACT

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INTRODUCTION

Achievement behavior has certain motivational and cognitive antecedents. This study related two of these antecedents, the nature of a child's academic motivation and the degree to which he believes he is personally responsible for his success and failures, to achievement and underachievement in the school setting.

The area of academic motivation has been studied extensively by Atkinson (1964). The defining characteristic of achievement motivation in Atkinson's theory is that it is aroused by circumstances in which one's performance will be evaluated against some standard of excellence. Since the evaluation may be favorable or unfavorable, these situations create ambivalence within the individual. Both the anticipation of success and the fear of failure are aroused and combine to determine the direction, intensity and persistence of that individual's achievement behavior.

The direction of achievement-related performance is defined by whether one undertakes or avoids achievement-oriented tasks (Atkinson, 1964). The two conflicting determinants of the direction, the tendency to approach success and avoid failure, are present to some degree in all individuals. If one cherishes success, then one will be more likely to approach and undertake the achievement-related task. On the other hand, if one is more disturbed by failure, then one will tend to avoid achievement tasks. In addition to these relatively stable personality characteristics of the motive to approach success and the motive to avoid failure, certain characteristics of the task also influence and interact with the approach-avoidance tendency. Some influential task characteristics will be discussed following the definition of persons considered to be high and low in achievement motivation.

Persons high in need for achievement have been defined as those whose motive to approach success is greater than their motive to avoid failure, the reverse being true of those persons considered to be low in achievement motivation. The motive to approach success has been measured by the number of achievement-related themes found on a Thematic Apperception Test (McClelland, Atkinson, Clark and Lowell, 1953). The motive to avoid failure is generally represented by a high anxiety score on the Test Anxiety Questionnaire (Sarason and Mandler, 1952). Subtracting the z-scores received on each test yields a resultant achievement motivation score, which represents the relative strength of a person's motive to achieve over his motive to avoid failure.

Individual differences in motive strength also interact with task variables. Perhaps the most salient task characteristic that influences an individual's approach-avoidance achievement tendency is whether the task is perceived as related to achievement. In an experiment involving a choice between achievement and nonachievement-related tasks, Weiner and Rosenbaum (1965) found that subjects low in resultant achievement motivation are less likely to choose the achievement-oriented task than subjects high in resultant achievement motivation.

Another situational characteristic that interacts differentially with high and low achievement motivation is the subjective estimate of the probability of success in an achievement situation. McClelland (1958) first observed that children high in need for achievement preferred to play a ring-toss game from intermediate distances from the peg. Children low in need for achievement, however, preferred to stand very close or far away from the peg, so that success was assured or virtually impossible. Feather (1961) further substantiated the finding that subjects high in need for achievement are most attracted to tasks of intermediate difficulty, and subjects low in need for achievement are most attracted to, or least inhibited by, very easy or very difficult tasks. Presumably, choosing high or low probability tasks minimizes the feared consequences of failure for the person low in achievement motivation--either he cannot fail at the easy tasks or he will not experience much shame for failing at the very difficult tasks. Using vocational aspirations as a measure of risk preference, Mahone (1960) found that college students high in need for achievement tended to strive for occupations that were commensurate with their abilities. Subjects low in need for achievement tended to aspire to unrealistic occupations that were generally beyond their abilities.

Associated with the subjective probability of success is another situational determinant which interacts with motive strength--the effect of previous success or failure on a given task. Here again, the performance of subjects high and low in need for achievement is differentially affected. Generally, success seems to enhance the performance of those low in achievement motivation and to dampen the performance of those high in achievement motivation. Failure, on the other hand, increases the performance of those high in need for achievement and decreases the performance of those low in need for achievement. Lucas (1952) found that subjects high in anxiety exhibit decrements in memory for consonant syllables following failure, but subjects low in anxiety increase their retention after failure experiences. Katchmer, Ross and Andrews (1958) found similar patterns of performance on a verbal-coding task with subjects differing in anxiety level. Weiner (1966) asked college subjects to learn paired associate lists, giving them feedback in the form of false norms that indicated they were either failing or succeeding. He found that subjects high in achievement motivation performed better than subjects low in achievement motivation on the task which was accompanied by failure but worse on the task in which success was experienced. It would appear, then, that subjects with a high fear of failure are discouraged by failure and are encouraged by success. Whereas, subjects high in resultant achievement motivation are motivated by failure and seem to relax after success.

Thus far, motive strength has been shown to interact with situational characteristics of task structure, probability of success, and past success and failure, to determine the direction of performance. Likewise, the intensity and persistence of an individual's behavior are affected by the relative strength of his approach and avoidance tendencies, as well as by certain task characteristics. Ryan and Lakie (1965) provide evidence that the magnitude of the performance of subjects high in achievement motivation increased on a perceptual-motor task when competing against another person. The performance of those low in achievement motivation decreased under the two-person competitive situation. As the intensity of performance of a person high in need achievement increases under achievement-oriented circumstances, so does his persistence. French and Thomas (1958) discovered that subjects high in achievement motivation persisted longer at an insolvable problem than subjects low in achievement motivation. Similarly, Atkinson and Litwin (1960) found that students high in need for achievement persisted longer on a final exam. Feather (1961) found persistence at an insoluable puzzle to interact with resultant achievement motivation and changes in the initial probability of success. Subjects high in achievement motivation continued to choose to work at the repeatedly failed puzzle when they were initially told that the puzzle was easy; however, they quickly changed to the alternative task when told that the puzzle would be difficult. In the first case, the probability of success was shifting even further away from the .50 level. Subjects low in achievement motivation persisted longer when told that the puzzle would be difficult, because this condition least inhibited their resultant achievement motivation.

To summarize, some of the behaviors found to be associated with high need for achievement are the following: Subjects high in achievement motivation voluntarily choose achievement-oriented tasks over nonachievement-related tasks (Weiner and Rosenbaum, 1965), they prefer achievement tasks of intermediate difficulty (McClelland, 1958; Feather, 1961), they are more realistic in choosing vocational goals (Mahone, 1960), and they perform better after failure than after success (Lucas, 1952; Katchmer, Ross, and Andrews, 1958; and Weiner, 1966). Further, their intensity of performance increases under competitive situations (Ryan and Lakie, 1965), and they persist longer at achievement tasks (French and Thomas, 1958; Atkinson and Litwin, 1960; and Feather, 1961). The reverse of the above statements has been found to be true of those persons low in achievement motivation.

One might well ask what the relationship is between the theory of achievement motivation and actual performance in an academic, school situation. Unfortunately, the relationship is not as clear-cut as one would hope, partly because actual achievement behavior, as represented by grades or test scores, is overdetermined. Not only does a subjective evaluation of performance enter into grading, but the performance of any given child probably reflects many more needs than that of the motive to achieve alone. For example, the student who has a high fear of failure would prefer to avoid all achievement situations in which this fear might be confirmed. The fact that he does approach achievement tasks leads us to believe that other motives, such as the need for affiliation or the need to please the teacher and parents, are operating to offset the low approach tendency.

The measure of anxiety, which is assumed to provide an index of the motive to avoid failure in the theory of achievement motivation, apparently has a clearer relation to academic performance than does resultant achievement motivation. Spielberger (1962) found that in the middle ranges of ability, college students high in Manifest Anxiety (Taylor, 1953) obtained poorer grade-point averages than non-anxious students. Sarason, Hill, and Zimbardo (1964), in a longitudinal study of children from grades one through four, found Test Anxiety (Sarason and Mandler, 1952) to be increasingly negatively related to IQ and to achievement test scores in reading and arithmetic. From grades one to three, changes in anxiety actually reflected corresponding changes in IQ: those who decreased most in Test Anxiety gained more in IQ than those who increased in anxiety.

A more frequently used paradigm to study school achievement than that of achievement motivation has been to classify groups of students into achievers and underachievers, according to whether actual academic performance is commensurate with the grade level of the students. Studies dealing with the area of school underachievement indicate that the underachiever is more likely to have negative feelings regarding his self-worth; he is more likely to have problems in social relationships, particularly with his peers; and he is more likely to be less well-adjusted than the achiever of comparable ability (Teigland, Winkler, Munger, and Kranzler, 1966; Jackson, 1968). Calhoun (1956) shows that the level of aspiration of the underachiever tends to be inappropriate. The underachiever's concept of his own potential is vague and has little to do with his actual achievement. This finding is similar to Mahone's (1960), that persons low in achievement motivation tend to have unrealistic vocational aspirations. Hence, there appears to be some overlap between behaviors associated with underachievement and low achievement motivation. Hummel and Sprinthall (1965) found the underachiever to be relatively fatalistic in his expectations concerning the outcomes of his personal effort as compared to the achiever, who approached tasks planfully, as if to rely on personal effort.

In most of the studies on the personality characteristics of the academic underachiever and achiever, general personality inventories have been used. The literature does not yield information on the achievement motivation needs of these groups of students. One would not expect a one-to-one relationship between underachievement and low achievement motivation; however, it is quite probable that some of the behaviors of the underachiever are mediated by the attitudes and motivational characteristics of the person low in need for achievement.

In addition to analyzing the motivational and behavioral aspects of academic performance, it is also important to understand the cognitive aspects, or how the student perceives himself in an academic situation. An influential approach to self-perception has been the study of locus of control, that of whether a person perceives that he is in control of what happens to him or whether he perceives that outside factors in the environment are in control. This area of research has its roots in Heider's work (1958) on attributional processes.

Attribution is the linking of an event to its underlying conditions or causes. For example, if a success is attributed to a person, then he is felt to be responsible for it; if it is linked to the environment, then the environment is given responsibility. According to Heider, attributions are used by people to help them to understand, to predict, and to control events in their environment.

Rotter (1966) was one of the first to investigate differences in how individuals assume causality to be related to events. He also pointed out that an event may be regarded as a reward or success by some but may not be so perceived by others. A large part of an individual's reaction depends on the degree to which he believes that the reward follows from his own behavior as opposed to outside forces. In other words, for an event to have strong reinforcing effects, according to Rotter, a causal relationship should be perceived between one's behavior and the reward which follows. This hypothesis has broad implications for learning processes: if the altering of behavior, or learning, is seen as contingent upon reinforcement, then perhaps the person who does not believe that he is personally responsible for his academic successes and failures will not learn as much as the person who does.

Rotter speaks of persons who differ in locus of control. Those who perceive reinforcements as contingent upon their own behavior evidence a belief in internal control. Those who perceive a noncontingent relationship between events and their behavior and who tend to perceive causality as resting in outside forces, such as luck, fate or powerful others, show a belief in external control. According to Rotter, these beliefs or expectancies are general in nature, covering many types of experiences. There is some question as to whether individuals face all events with the same generalized attitude. Perhaps an attitude is specific to only certain types of related experiences, such as achievement situations. Following the specific approach to individual differences in locus of control are Crandall and her colleagues, who refer to an individual's belief in self responsibility only in academic-related situations.

Most of the studies related to Rotter's position manipulate experimentally the locus of control to be perceived by the subject by providing skill and chance conditions for learning. Skill conditions are expected to enhance the belief in internal control, and chance conditions are expected to provide the setting for the belief in external control. Either an ambiguous task is used, in which case the instructions indicate that skill or chance is involved, or a task which is culturally determined as skill or chance, such as dice throwing or solving arithmetic problems, is provided. It is hypothesized that the subjects' expectancies for future reinforcement will differ under the conditions of skill and chance learning.

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Phares (1957) found that partial reinforcement feedback of right or wrong under skill conditions had a greater effect on raising or lowering expectations for future reinforcement than it did under chance conditions. Extinction studies by James and Rotter (1958), Rotter, Liverant, and Crowne (1961), and Holden and Rotter (1962) indicate that the partial reinforcement effect found in the animal literature was

operative only under conditions of chance. In the skill conditions, 100% reinforcement in trials prior to extinction led to a longer extinction period than did partial reinforcement. This finding was explained in terms of the subjects' persisting belief in internal control--the greater the previous reinforcement, the longer it took subjects to realize that they were no longer able to perform the task successfully. Whereas, in situations in which success and failure are experienced randomly, subjects learn that their ability at the task has little to do with the reinforcements received.

Studies using personality measures of a generalized expectancy for reinforcements indicate that persons in a higher socioeconomic level tend to be more internal than lower class persons (Franklin, 1963; Battle and Rotter, 1963). Negroes tend to be particularly external. However, Gore and Rotter (1963) found that among Negro college students, those who were active participants in the civil rights movement were more internal than non-activist Negro students.

In a risk-taking situation internals prefer intermediate probability bets to the long-shot bets preferred by externals (Liverant and Scodel, 1960), a characteristic also found to distinguish persons high from those low in achievement motivation. In addition, internals tend to be less conforming and bet more on themselves under group pressure than externals (Crowne and Liverant, 1963).

In an information-seeking experiment, Seeman (1963) found that alienated (external) inmates in a reformatory learned less and were less interested in information that was directly relevant to determining an outcome (obtaining parole) in their immediate future. There were no differences between alienated and non-alienated inmates in the learning of other types of information; therefore, Seeman could not conclude that internals learn more generally. A key feature, it seems, that must characterize the information to be learned in order to distinguish internals from externals is that it be related to that which can be used in exerting personal control over one's outcomes in the immediate future.

In summary, Rotter and his colleagues' major contribution has been to alert researchers in human learning to the role of subjects' cognitions regarding their sense of internal or external control in the learning situation. Certainly, learning outcomes cannot be properly interpreted, particularly in the experimental situation, without taking this variable into account. Another contribution of studies following Rotter's approach is to delineate some of the behaviors exhibited by individuals classified as internal. Persons believing that they can control their own destiny are likely to place greater value on skill or achievement reinforcements, to be more active in trying to change their environment, to be realistic and choose bets of intermediate probability in situations involving risk, to be resistive to group pressures, and to be more attuned to information that might affect their immediate future behavior.

Studies dealing more specifically with the achievement area follow primarily from Crandall's point of view--that an internal or external attitude is likely to be specific to certain related situations. For

example, a person who does not believe himself to be in control or responsible for what happens to him academically might express an internal orientation to the area of sports. Contrasting with Rotter's emphasis on an adult population, Crandall studies children. The Intellectual Achievement Responsibility (IAR) Questionnaire was thus developed to assess children's beliefs in reinforcement responsibility solely in intellectual-academic achievement situations.

The rationale behind the development of the IAR measure derives in part from Crandall's earlier work in achievement motivation. It was felt that the degree to which children believe they are responsible for their academic successes and failures will affect their effort expended in obtaining achievement-related goals. Those with an internal orientation should show greater initiative in seeking intellectual rewards and should exert more effort and persist longer in achievement situations. Conversely, those who believe their rewards and punishments to rest in the hands of powerful others or circumstances have no reason to exert effort in trying to increase rewards and avoid punishments. There is some evidence to support this hypothesis. Crandall, Katkovsky, and Preston (1962) found that high-internal boys spent more time and exhibited more intense strivings in intellectual pursuits during free-play than did low-internal boys, although this relationship did not hold for the early-grade-school girls.

The Crandall, Katkovsky, Crandall (1965) study provides further support for the idea that the more internal the child, the greater his achievement approach behaviors should be, thereby resulting in his acquiring more concepts and problem-solving skills which would be reflected in his grades and achievement test scores. Both boys and girls with high internality scores had significantly higher report-card grade averages than low internals. High internal subjects, particularly females, also tended to have higher achievement test scores than low-internal subjects. A recent publication from the Office of Education (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, and York, 1966) reports that of all the attitudinal, familial, and school variables studied in their nationwide survey, sense of control was the most strongly related to school achievement.

Interestingly, the achievement motivation and manifest anxiety measures did not predict children's achievement performance as did the internality measure in the Crandall et al. (1962) study. In another study Feather (1967) failed to confirm a relationship between resultant achievement motivation and a generalized locus of control in adults. It would appear, then, that the hypothesized relationship between individual differences in need for achievement and perceived locus of control receives only suggestive support.

Weiner and Kukla (in press) discuss some of the factors that could be concealing the relationship between achievement motivation and locus of control. One factor which could be responsible for the lack of results in Feather's study is his use of a general locus of control measure, which contains items that have little to do with the thoughts and behaviors associated with achievement motivation. The Crandall et al.

(1962) study escapes this argument in that an achievement-oriented scale was used. However, this research was done before the IAR scale was fully developed, so that only a total internality score was reported for each child. Later in the 1965 study, internality for success (I+) and internality for failure (I-) scores were reported and were found to be relatively independent and to differentially predict achievement behaviors. Perhaps, as Weiner and Kukla point out, acceptance of responsibility could be contingent on the outcome of the event in question, and might differ for low and high achievement motivation groups. Since the IAR scale contains positive and negative outcomes, the relationship between achievement motivation and perceived locus of control in the Crandall et al. (1962) study might have been masked.

Weiner and Kukla (in press), in fact, do show that for males in the third through sixth grade and in high school, those high in resultant achievement motivation attribute success more to themselves than do those males low in achievement motivation. However, the two motive groups do not differ significantly in their internal attribution of failure. The data for females, however, was not significant.

If persons high in need for achievement take more personal responsibility for their successes, then they feel more pride and more reward for goal attainment (Rotter, 1966), thereby increasing their approach tendencies to achievement-oriented situations in the future. Persons low in achievement motivation, on the other hand, do not feel as much pride nor as much reward because their sense of personal responsibility for attaining goals is lower. Weiner and Kukla thus view perceived locus of control as a cognitive link between level of achievement motivation and the undertaking of achievement tasks.

Other experiments reported in the same article (Weiner and Kukla, in press) indicate that attributions are differentially made to ability and motivation, thus affecting the reward or punishment value of attaining or not attaining the goal. For instance, it was found that teachers reward effort more than ability. Given the same outcome, the child low in ability who tries hard receives more praise than the high-ability child who expends little effort. If such a reward and punishment system operates in our judgment of others, perhaps it operates in self-perception. The Crandall IAR scale, in addition to containing positive and negative outcomes, also asks the child to ascribe the outcome to either his ability or his effort. Just as the outcome of an event was found to be important in delineating the relationship between achievement motivation and perceived locus of control, so taking responsibility when the outcome involves ability or motivation might be another factor in aiding our understanding of the relationship. This last factor will be considered in the present study.

As we have seen, the precedent for the combined study of achievement motivation and locus of control has been set. What has not been studied is the application of these variables to the behavioral problem of academic underachievement and achievement in school. If the level of need for achievement indicates the general tendency to approach achievement-related tasks, and perceived locus of control provides the mediating

link between achievement motivation and the undertaking of achievement tasks, then it is reasonable to expect these variables to be partially responsible for the differences in approach behaviors between academic achievers and underachievers.

The purpose of the present study is to replicate in part the findings of the Crandall et al. (1965) and the Weiner and Kukla (in press) studies. Additional information is offered regarding the assignment of internal responsibility to ability or effort on the IAR scale, and the effect of this ascription on the overall relationship between achievement motivation and perceived locus of control. Further, a resultant achievement motivation measure for children and the Intellectual Achievement Responsibility Questionnaire is related to the achievement test score performance of those defined as academic achievers and underachievers.

The hypotheses to be tested are the following:

(1) Children high in achievement motivation accept more responsibility for what happens to them academically than children low in achievement motivation. On the basis of this hypothesis it is predicted that the high achievement motivation children will obtain a higher mean total I score on the IAR, which includes both success and failure experiences, than the low achievement motivation children.

(2) In particular, subjects high in achievement motivation accept more responsibility for success than subjects low in achievement motivation.

(3) Subjects high in achievement motivation attribute success to ability and failure to a lack of effort relatively more than subjects low in achievement motivation.

(4) The differences between the achieving and underachieving groups are expected to be in the same direction as for the groups classified as high and low in achievement motivation. Children who are academic achievers will be assumed to be operating under the same motivations and cognitions as those children high in achievement motivation. Conversely children defined as underachievers will be expected to behave similarly to those children low in achievement motivation. Therefore, the first three hypotheses apply to the achieving and underachieving groups.

METHOD

Children (N=523; 266 male, 257 female) in the 4th, 5th, and 6th grades of three schools in the Manhattan Beach City Schools comprise the subject sample. These children come from white, middle-class families living in single dwelling homes within a suburb of the metropolitan area of Los Angeles. This sample contrasts with Crandall et. al.'s (1965), which was drawn from a non-metropolitan area.

The California Short-Form Test of Mental Maturity (CTMM), 1963 Revision, and the California Achievement Tests (CAT), 1957 Edition with 1963

Norms, were administered to the above children in October of 1968.

The CTMM is a group intelligence test, which can be administered to levels kindergarten through adult. Seven scores are obtained on the CTMM: Logical reasoning, numerical reasoning, verbal concepts, memory, language total, non-language total, and total. Only the total IQ score is used in the data analysis.

The CAT is a group administered achievement battery, tapping the skills involved in reading, arithmetic and language. Again, only the grade placement scores for the total battery is used in this study. The latest norming of the CAT, as well as that of the CTMM, occurred in 1963 when both tests were given to a national sample of over 15,000 students. This joint administration provided the basis for determining Anticipated Achievement Grade Placements, which are the test performances individual students could be expected to obtain, based on the norm performance of the nationwide sample of students with comparable chronological age, years of school experience, mental age and IQ level (Tiegs and Clark, 1963). The Anticipated Achievement Grade Placement is one of the latest procedures devised for determining anticipated achievement from intelligence and achievement test data. This procedure is now widely used within the Los Angeles County School System.

The underachieving and achieving samples were obtained by finding the difference between the Anticipated Achievement Grade Placement Score and the actual Grade Placement score for the total CAT battery, which represents the grade level at which the students are presently achieving. Those who are performing at four months or below their Anticipated Achievement score were defined as underachievers. Those who are performing from three months below grade level to above grade level were defined as achievers. The cutoff score placed at four months below grade level allows for the inclusion in the achieving sample those who for some reason tested below grade level but who are probably performing at grade level; and it guarantees that those defined as underachievers will in all likelihood not be achieving at grade level in school.

The data were analyzed for all subjects classified as achievers and underachievers regardless of IQ. However, a subgroup of achievers and underachievers falling within the 90 to 115 IQ range was also examined. According to Atkinson (1964), students in the middle range of ability should be more strongly motivated to achieve or to avoid failure in a school situation where all ability levels are represented. This hypothesis is based on the findings that approach and avoidance of achievement tasks are strongest at intermediate difficulty levels. Very bright or very dull students should find the competitive school situation either too easy or too hard, both of which expectations are not very effective in arousing achievement-related dispositions. Differences between achieving and underachieving groups in the 90 to 115 IQ range are therefore expected to be larger than for the sample as a whole.

All children were given the Children's Achievement Scale (CAS) (Weiner and Kukla, in press) and the Intellectual Achievement Responsibility (IAR) Questionnaire (Crandall, Katkovsky, and Crandall, 1965) in February, 1969.

Performance on these two measures was analyzed for the total sample, for males and females, for underachievers and achievers, and for underachievers and achievers in the 90 to 115 IQ range. Subgroups of children scoring in the extremes on the two measures, for example very high and very low in achievement motivation and high in internality for success, were also examined.

The Children's Achievement Scale (CAS) is a forced-choice measure of resultant achievement motivation derived empirically from Atkinson's 1957 theory of resultant achievement motivation (Atkinson, 1964). The items were chosen so as to differentiate high from low resultant achievement sub-groups on the basis of approach or avoidance behaviors; preference for, or avoidance of, intermediate risk tasks; and the kind of affect, hope or fear, expressed in achievement situations.

The CAS was first used by Weiner and Kukla (in press) to relate achievement motivation and locus of control in children in grades three through six. It did not predict performance on the IAR scale for third and fourth graders, but it did have some predictive validity for the fifth and sixth graders. One finding indicated that fifth and sixth graders falling above the median on the CAS, which reflects a high need for achievement, tended to take more internal responsibility for success than for failure on the IAR scale. The Children's Achievement Scale, which may be found in the Appendix, was chosen for use in the present study to provide further validation.

The Intellectual Achievement Responsibility scale is a forced-choice inventory measuring beliefs in internal and external reinforcement responsibility in achievement situations. It contains an equal number of positive and negative events, for which the child chooses to give himself credit or to place the responsibility on such external sources as parents, teachers, or peers. In addition to a total I (internal or self-) responsibility score, internality scores are reported for success (I+) and failure (I-) items. A child's I+ score is obtained by summing all the positive outcomes for which he takes credit, and his I- score by summing all the negative events for which he takes blame. The total I score is the sum of the I+ and I- scores. Externality scores are not reported, since a low internality score represents an external belief in the control of reinforcements.

The internal alternatives of the IAR tap two basic sources for the child's attribution--ability and effort. Of the 34 total internal alternatives, 11 involve attributions to ability and 13 involve attributions to effort or motivation. The terms effort and motivation are henceforth used interchangeably. Ten internal-response items are unclassifiable. Refer to the Appendix for the IAR items and their classifications. The internal alternatives are labeled I. Positive and negative outcomes are indicated by + or -. Whether the I+ or I- items tap ability or motivation sources of control is indicated by A and M. Unclassifiable I items are shown as UC.

The IAR scale was found by Crandall, Katkovsky, and Crandall (1965) to have high test-retest reliability and predictive validity to achievement-test measures and to report card grades for children in grades 3, 4, and 5. The predictive validity of the IAR scale is tested in the present

study by dividing the sample into achieving and underachieving groups and comparing their mean scores on this scale.

Both individual difference measures used in the present study, the CAS and the IAR, were group-administered and given to entire classes over a two-week period. The experimenter read each item aloud, and the children responded by circling the letter of their choice with their pencil. Two experimenter aides walked about the classroom making sure that the instructions had been understood and that no item was left blank.

RESULTS AND DISCUSSION

Subjects scoring in approximately the top and bottom 10% of the CAS were identified as high and low achievement motivation groups. The mean achievement motivation score for all subjects (N=523) was 9.6. Subjects high in need for achievement (N=57) obtained a score of 13 or above on the CAS, and subjects low in need for achievement (N=52) obtained a score below 6. By chance, members of both the high and low groups were distributed evenly across the three grade levels. The subjects comprising these two groups are used in testing the hypotheses dealing with expected differences between high and low achievement motivation groups. The main results are shown in Table 1.

Children high in achievement motivation were found to take more responsibility overall for what happens to them academically than children low in achievement motivation. The mean total I score of the high achievement motivation group was 24.5, which was significantly greater ($t = 2.90$, $p < .01$) than the mean total I score, 22.2, of the low achievement motivation group.

Group differences in I+ and I- scores were also significant. The high achievement motivation group obtained a mean I+ score of 13.3 and the low group a mean I+ score of 12.0 ($t = 2.59$, $p < .01$). Thus, children high in achievement motivation take more credit for success than do children low in achievement motivation. Further, the high group received a mean I- score of 11.2 and the low group a mean I- score of 10.1 ($t = 1.96$, $p < .05$), which indicates that those high in need for achievement also take relatively more responsibility for failure. Weiner and Kukla (in press) found differences between high and low achievement motivation groups significant for I+ scores but not for I- scores. Thus, in the present study children high in need for achievement not only take more internal responsibility for their successful outcomes but also more for their nonsuccessful outcomes than do children low in need for achievement.

The difficulties involved in tapping attributions made to ability and motivation in the I+ and I- categories were not fully considered before the data was analyzed. Most of the problems are inherent in the IAR scale, which was not designed with the ability-motivation factor in mind. There are an unequal number of items contained within both the I+ and I- divisions (6A+, 7M+, 5A-, 6M-), which makes the comparing of relative differences between the means of different groups not totally meaningful. Furthermore, the scale does not force the subject to choose between an ability and effort attribu-

TABLE 1

Mean CAS and IAR scores for high and low achievement motivation groups and achievers and underachievers

Group	N	CAS	IAR Tot. I	I+	I-	A+	M+	A-	M-
High Ach.[a]	57	13.8	24.5**	13.3**	11.2*	4.4 (73%)	5.2 (74%)	2.5 (50%)	3.8 (63%)
Low Ach.	52	5.6	22.2	12.0	10.1	4.2 (70%)	4.5 (64%)	2.1 (42%)	3.5 (58%)
Achievers[b]	157	9.5	23.6	12.9*	10.7	4.2 (70%)	5.0 (71%)	2.2 (44%)	3.6 (60%)
Underach.	93	9.3	22.7	12.1	10.5	4.1 (68%)	4.9 (70%)	2.4 (48%)	3.4 (57%)
All Ss	523	9.6	23.3	12.6	10.7	4.2 (70%)	4.9 (70%)	2.2 (44%)	3.5 (58%)

[a] Comparison with low achievement motivation group.
[b] Comparison with underachieving group.
[c] Because of the unequal number of ability and motivation items within both the I+ and I- categories, mean A and M scores were converted to the per cent of the total possible score that could be obtained in each category.
* $p < .05$
** $p < .01$

tion. Rather, if a subject does not wish to attribute a failure outcome to lack of ability, he may choose the external response to that question. Whereas, the child might have preferred to maintain an internal orientation to the failure, but attributing it to a lack of effort in that instance. It is concluded that the breakdown of internal responsibility for success and failure into ability and motivation components needs further study in a measure other than the IAR scale. With these difficulties kept in mind, the results concerning attributions made to ability versus effort are to be considered tentative.

Because of the unequal number of ability and motivation items in the I+ and I- categories, the mean A and M scores obtained by each group were converted to the per cent of the total possible score that could be obtained in each category (see Table 1). To determine the relative attributions made to ability versus motivation under success and failure circumstances, the mean per cent of motivation items ascribed to were subtracted from the mean per cent of ability items ascribed to for each group. These scores are plotted in Figure I.

High achievement motivation was expected to be related to a belief in ability as the responsible variable for success and to a belief in lack of effort as the responsible variable for failure. This prediction does not hold, particularly when the performance of the high achievement motivation group is compared to that of the low achievement motivation group in Figure I. The group high in achievement motivation tends to attribute both success and failure more to effort, whereas the group low in achievement motivation clearly attributes success relatively more to ability and failure relatively more to lack of effort. This result is seemingly contradicted in Table 1, where the mean per cent in all categories is greater for the high achievement motivation group than for the low achievement motivation group. However, if it is the relative difference in attributions made to ability versus motivation in the two groups that is of major importance, then the original hypothesis is not supported.

The results concerning the relationship of school achievement and the belief in internal responsibility for events tend to parallel the results reported above on the relationship between achievement motivation and internality. Mean CAS and IAR scores were obtained for achieving and underachieving groups irrespective of IQ and for those subjects within the 90 to 115 IQ range. Since the differences between achieving and underachieving groups appeared slightly greater when the IQ range was limited, it was decided to test the differences between these groups. The results are found in Table 1.

Children who are performing academically at or above their grade level tend to feel more general responsibility for what happens to them than children who are performing below their capacity. The achievers obtained a mean total I score of 23.6 and the underachievers a mean score of 22.7. The difference in mean scores was not significant ($t = 1.60$, $p < .1$) but in the predicted direction.

However, achievers take significantly more responsibility ($t = 2.16$, $p < .05$) for their successful outcomes than do those underachieving in

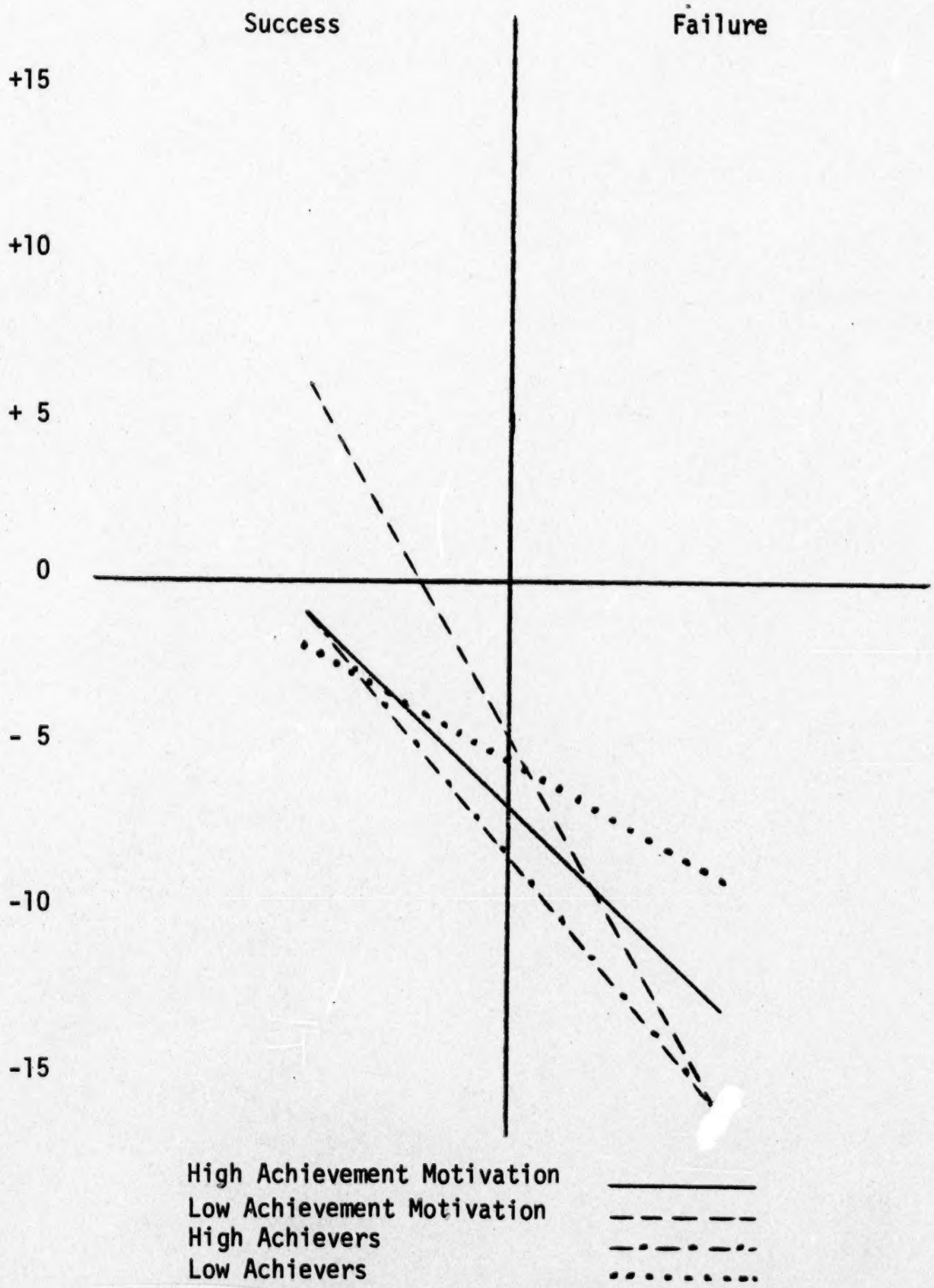

Figure I. % Ability items minus % motivation items for all groups under success and failure conditions

school. The achieving group obtained a mean I+ score of 12.9, and the underachieving group a mean score of 12.1. The difference in I- scores was very small. The achievers obtained a mean I- score of 10.7 and the underachievers a mean of 10.5 ($t = .577$, $p < .5$). Thus the important variable distinguishing achievers from underachievers is the extent to which responsibility is taken for success.

When the relative ascriptions to ability versus motivation are compared in success and failure circumstances for the achieving and underachieving groups (see Figure I), achievers attribute failure to lack of motivation relatively more than do the underachievers. Success is attributed fairly evenly to effort for both groups. Therefore, the hypothesis that achievers would attribute success to ability and failure to a lack of effort relatively more than underachievers is only partially supported.

If underachievement is viewed as involving a lack of motivation to achieve, it might be conjectured that academic achievers and underachievers would differ in measured achievement motivation. The hypothesis as so stated is not supported in the present study. The achievers obtained a mean CAS score of 9.5, which did not significantly differ from the underachievers' mean CAS score of 9.3.

However, some support is found for a relationship between high achievement motivation, high internality for success and academic achievement; and, on the other hand, a relationship between low achievement motivation, low internality for success, and academic underachievement. A subgroup of 32 subjects were identified as high in achievement motivation and high in internality for success. They had a score of 13 or above on the CAS and an I+ score of 14 or above on the IAR. Of these children, 24 were achievers, 6 were underachievers, and 2 did not have achievement test scores. Another group was identified as low in achievement motivation and low in internality for success. This group had a score of 6 or below on the CAS and an I+ score of 10 or below on the IAR. Of these 15 subjects. 6 were underachievers, 7 were achievers and 2 were unclassifiable. ($\chi^2_{(1)} = 3.47$, $p < .07$). Significance did not quite reach the .05 level, but fairly suggestive support is offered for the hypothesis that both the factors of achievement motivation and belief in self-responsibility for success contribute to school performance. Further, both factors are needed to predict school performance.

Since part of the purpose of the present study is to replicate the Crandall et. al. (1965) study, some of the similarities and contrasts in results will be reported. See Table 2 for the major mean scores for males, females, and all subjects across the three grade levels. As in the Crandall research, mean total I scores and mean I+ and I-scores at each grade level were above the mean internality scores that could be expected by chance alone. The responsibility taken for success was approximately the same in each sample; however, Crandall's subjects took more responsibility for failure at all grade levels than did the subjects in the present study. Both males and females in the present study increased their belief in internal responsibility for failure between the ages of 10 and 11, but not to the level of responsibility accepted by Crandall's subjects. This increase was accomplished without a comparable increase in mean I+ scores.

TABLE 2

Mean CAS and major mean IAR scores
for males and females across grade levels

Subjects	N	CAS	IAR I+	IAR I-	IAR Tot. I
Males					
4th	69	9.8	12.6	10.3	22.9
5th	99	10.0	12.6	10.0	22.6
6th	98	9.4	12.5	11.1	23.6
Females					
4th	57	9.7	13.1	10.9	24.1
5th	87	9.2	12.4	10.3	22.8
6th	113	9.6	12.6	11.2	23.8
All Ss					
4th	126	9.8	12.8	10.6	23.4
5th	186	9.6	12.5	10.2	22.7
6th	211	9.5	12.6	11.2	23.7

Note.--CAS is a measure of children's achievement motivation tendency. IAR is a measure of children's Intellectual Achievement Responsibility. I+ refers to internal responsibility taken for success. I- refers to responsibility taken for failure. Tot. I refers to responsibility taken for both success and failure.

Correlations between I+ and I- scores were variable and low ($r = .249$ for all Ss) as in the Crandall study. Therefore, further confirmation is added to the idea that assuming responsibility for successful and failure outcomes may be quite different processes within the individual and that to use the total I score alone has dubious value.

In neither the present nor the Crandall study did the correlations of IAR scores for males and females separately at each grade level form an observable or consistent pattern. Even mean achievement motivation scores, instead of increasing across age levels as would be expected, tended to remain the same for males and females regardless of age level. However, one interesting observation from Table 2 is that in three different cases involving males, females, and all subjects, when the mean I+ score droppped or the mean I- score increased, these changes were accompanied by a slight drop in the mean achievement motivation score. Again, achievement motivation seems to be connected in still another way to a belief in internal responsibility for success.

In summary, children high in achievement motivation have a greater belief in self-responsibility for what happens to them academically, whether it be a positive or negative event, than do children low in achievement motivation. The children high in need for achievement particularly give themselves credit for their successes. Contrary to expectation, the high group did not attribute success to ability and failure to a lack of effort relatively more than the low group. In fact, it was the low achievement motivation group who performed as the high group had been expected to perform.

The results concerning the achievers and underachievers in the 90 to 115 IQ range indicate that achievers tend to feel more self-responsibility for all their academic outcomes than do underachievers. Achievers believe themselves to be significantly more responsible for their successes than do underachievers. Only partial support was found for the hypothesis that achievers would ascribe success to ability and failure to lack of effort relatively more than underachievers. The achievers did attribute failure more to lack of effort than did the underachievers.

Support is also found for the over-riding assumption of this paper--that high achievement motivation, a belief in self-responsibility for academic outcomes, particularly success, and achieving at or above grade level in school would be related. Subjects high in achievement motivation and high in internality for success tended to be achievers, and subjects low in need for achievement and low in internality for success tended to be underachievers significantly more than would happen by chance alone. Furthermore, these findings provide a basis for predicting achievement and underachievement. For example, one can predict whether a student will be an academic achiever or underachiever if it is known that he falls within either one of the extreme groups of students classified as high in achievement motivation and high in internality for success, or low in achievement motivation and low in internality for success.

The rationale for the hypothesized relationship between achievement motivation, beliefs in internal or external responsibility for academic outcomes, and achievement or underachievement in school is justified in light of the results of the present study. However, this hypothesis deserves more definitive study.

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